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Naval Air Systems Command

NAVAIR Science and Technology Newsletter

March 2011

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Research and Intelligence

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On the cover: Algae biomass offers advantage over traditional biofuel crops.

NAVAIR Science and Technology (S&T) Newsletters are published by the Technical Communication Office (4L6200D) to provide unclassified technical information that pertains to chemistry, life sciences, physics, and technical communication. This newsletter also intends to inform the NAWCWD S&T community about updates, professional development opportunities, and technology highlights.

The contents are not necessarily the official views of or are endorsed by the U.S. Government, the Department of Defense, or the United States Navy.

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"We are committed to improving the transfer of S&T into Warfighting capabilities."

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WEB ACCESS

All issues of the NAVAIR Science and Technology Newsletter are accessible online for Navy Marine Corps Intranet (NMCI) users at https://mynavair.navair.navy.mil/scitech. The newswletter is also available to the public at www.go.usa.gov/47x.

To subscribe or submit ideas call the Managing Editor at 760.939.8729.

Welcome Aboard

Sheila Holzberger (4L6200AD), Anna Zelinski (4L6200AD), and Mary Hickey (4L6200AD).
Source: NAWCAD Technical Communication Office

Mary Hickey
Hickey recently joined the NAWCAD Technical Library as a Reference Librarian. In her last position, she established a new library for the National Security Space Institute in Colorado Springs, Colorado, which is a branch of the Muir S. Fairchild Library at Air University. She has a master's degree in Library and Information Science from the University of Wisconsin-Milwaukee and an MBA from Regis University in Denver.

Anna Zelinski
Zelinski joined the NAWCAD Technical Library this past September as a Library Technician. She spent the last decade as an Air Force dependent, working as an academic advisor, library technician, Red Cross volunteer, and mother in Germany and Alaska. Zelinski holds a BS in Microbiology and a master's degree in Nutrition Science. She plans to begin a Library Science master's program this fall.

Sheila Holzberger
Holzberger joined the NAWCAD Technical Communication Office as a Technical Writer/Editor this past July. With experience as a Marketing Director, Corporate Communications Manager, Instructional Technologist, and Proposal Writer, she brings a diverse range of talents to the TCO. Holzberger spent the past 20 years as a publications consultant for government and industry. She has a BA in English Honors and a master's degree in Industrial Education from the University of Maryland.

NAWCWD Celebrates Dr. Martin Luther King, Jr.'s Birthday

By Nicolle Walkling, Research and Intelligence Department, Technical Communication Office, NAWCWD

On 12 January 2011, the Total Force Strategy and Management Department hosted a video teleconference between NAWCWD, China Lake and Point Mugu personnel to celebrate the life and works of Dr. Martin Luther King, Jr.

The celebration opened with Captain Rich Burr, NAWCWD Vice-Commander. He praised the nonviolent mindset of Dr. King, reminding all in attendance that Dr. King's own goal of diversity corresponds with NAWCWD's "strategic goal for diversity, which in turn leads to diversity of thought." Burr finished by introducing the keynote speaker of the morning, Bishop Princeton L. Allen of Port Hueneme, CA.

Bishop Allen praised the widespread secular and religious impact that Dr. King made on the world through

nonviolent reform. Dr. King was the ultimate humanitarian, Allen shared, and his dream of equality for all people - the dream that we should all have - is not limited to one culture or country, but instead applies to the entire human race. Allen described Dr. King as a man who strove for change and peace and "challeng[ed], with the power of a dream, our nation to live out its creed."

Veronica Vasquez (Code 734000E), NAWCWD equal employment specialist, followed Allen's speech with special acknowledgements and a few words of her own. She urged those in attendance to find opportunities to volunteer on the Dr. Martin Luther King (MLK) Day of Service, asking "What are you doing with your talents that you have been given?" Vasquez expressed the need to change the trend of complacency in our culture and to reach out to those in our communities that are in need.

In order to show attendees exactly how people can become involved, a portion of this celebration was reserved for NAWCWD personnel to present information about MLK Day events in their respective communities. Kimberly Silver (4L6200D), NAWCWD technical writer/editor, announced a number of events, ranging from church services in the Ridgecrest area to MLK Day of Service projects and parades in Lancaster. Ramona Franklin (452100E), NAWCWD AV-8B Mission Planning Environment System Engineering Lead, shared a number of occurring events in Ventura County, such as various speeches, marches, and performances in Dr. King's honor.

Dr. Ronald Smiley (450000E), NAWCWD Senior Executive Service, Director of Electronic Warfare Combat Systems and Avionics Department, closed the celebration by highlighting Bishop Allen's remarks on the vast positive impact that Dr. King had on the nation and world as a whole.

"Dr. Martin Luther King Jr. epitomizes both service and leadership," Dr. Smiley said, "and is a role model and hero to all."

The NAWCWD Honors Women History Month: Our History is Our Strength

The Weapons Division is proud to honor and recognize the achievements of women within our WD workforce at this year's Women History Month Celebrations.

On 22 and 23 March 2011, Dr. Karen L. Higgins, former Executive Director for Research and Engineering, NAVAIR Weapons discussed her history at WD and the unique opportunities women have in today's society.

NAWCWD Joins MIT Industrial Liaison Program

By Alan Vannevel, Research and Intelligence Department, Physics Division, Image and Signal Processing Branch, NAWCWD

The Massachusetts Institute of Technology (MIT) is known worldwide for developing cutting edge breakthrough technologies, with nine Nobel laureates currently serving on the faculty. Through the MIT Industrial Liaison Program (ILP), NAWCWD scientists and engineers are now able to leverage the wealth of experience, innovation, and research within MIT programs and faculty to advance naval research and technology goals.

NAWCWD joined the MIT ILP in October 2010. The ILP provides a framework and guidance for developing productive partnerships with MIT faculty, an endeavor which could otherwise be quite challenging, as MIT employs over 3,000 faculty members in hundreds of interdisciplinary labs and research institutes. As an ILP member, NAWCWD can monitor emerging/disruptive technologies, validate key investment decisions, and seek faculty advice. Additionally, such a partnership can raise awareness of NAWCWD's technology objectives among MIT's faculty. All are benefits which could lead to new technological discoveries and solutions for both short and long term technical problems.

Maren Cattonar, the industrial liaison officer assigned to NAWCWD, is able to identify the right programs and faculty for advancing NAWCWD research and technology goals. She visited China Lake in November 2010 to provide an overview of the benefits and services of ILP membership.

Joining the MIT ILP is the latest step in strengthening the successful relationship between NAWCWD and MIT. NAWCWD has a long history with the MIT Sloan School of Business, and several WD leaders have become Sloan MBA Fellows. Mr. Andy Corzine, 4.0 Technical Deputy, is the most recent graduate, joining such MIT Sloan alums as Scott O'Neil, WD Executive Director, and Dave Janiec, 4.7 Department Head.

To learn more about the MIT ILP call 760.939.1440.

Naval Air Systems Command Fellows Program First Annual Science and Engineering Symposium: 100 Years of Naval Aviation

Patuxent River, MD, USA; 26-27 July 2011

The NAVAIR Fellows Program honors individuals from across the Command who consistently demonstrate significant engineering and scientific acumen. Fellows are recognized as experts in their disciplines who continuously make significant technical contributions, exercise considerable originality and innovation, and advance their areas of expertise. Fellows provide advice and counsel to the Command and serve as advisors and mentors to the organization's engineers and scientists.

PROGRAM: The intent of the First Annual Science and Engineering Fellows Symposium is to showcase the breadth of research and programs Fellows (Associate, Full, and Esteemed Fellows) lead across all NAVAIR sites. Presentations and panel discussions will facilitate the exchange of new ideas, concepts, and data stimulating ideas for future research and collaboration.

The symposium will focus on science and engineering grouped into eight focus areas: Avionics, Human Systems, Materials, Modeling/Simulation, Propulsion, Systems Engineering, Test and Evaluation, and Weapons and Stores. Break-out rooms will be available for those who wish to continue separate discussions after sessions.

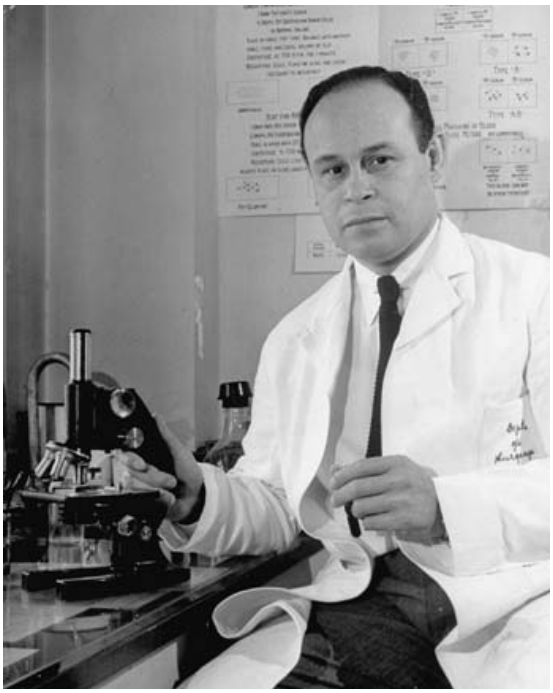
The program will be divided into a plenary session, slide presentations, and posters. The latter will be set up the afternoon of the first day in parallel to a reception to maximize the time for interaction.

The objective is to expose the participants to the wide range of cutting edge R&D and T&E conducted throughout the organization, identify key questions and challenges for future programs, and encourage collaborations among competencies. Proceedings will be published on CD-ROM in PDF format and made available according to Distribution D.

VENUE AND DATES:

Where: River's Edge Conference Center, Patuxent River, MD.

When: 26-27 July 2011



Providing Blood for Wounded Soldiers

By Dennis Robinson, Target Recognition Branch, NAWCWD and Kimberly Silver, Research and Intelligence Department, Technical Communication Office, NAWCWD

Every two seconds, someone in the U.S. needs blood. Overseas, U.S. Warfighters rely on blood banks to treat the wounded, as well. Today's blood banks and the American Red Cross blood program are a direct outcome of the developments made by medical pioneer Dr. Charles Richard Drew. In honor of Black History Month, NAVAIR Science and Technology commemorates Dr. Drew, whose innovative system of blood plasma storage revolutionized the medical profession.

A Scientific Breakthrough: Blood Plasma Storage and Production

During World War II, Dr. Drew emerged as a leading authority on mass transfusion and processing methods. While earning his doctor of medicine degree from Columbia University in the late 1930s, he had discovered that blood could be preserved by separating the liquid red blood cells from the near-solid plasma, freezing the two separately, and reconstituting them at a later date. By the end of 1940, he had transformed the test tube methods of many blood researchers, including himself, into the first successful large-scale blood plasma production techniques.

These techniques were first used during World War II to treat wounded soldiers in Europe and the Pacific. In August of 1940, the possibility of an invasion in England loomed. Anticipating a need for large amounts of blood for British civilians and military, the American Red Cross financed a large blood collection project in New York City hospitals in order to export blood plasma to Britain. Dr. Drew was appointed medical supervisor of the project. Britain's military used Dr. Drew's blood preservation process to establish mobile blood banks that could provide life-saving blood to wounded soldiers on the front lines.

Desiring to establish a reserve blood supply for U.S. forces, the U.S. Government asked the Red Cross to establish a program similar to the Plasma for Britain Project but on a smaller scale. By 1941, Dr. Drew was named director of the newly formed Red Cross Blood Bank. He was also appointed as the assistant director of the National Research Council, in charge of blood collection for the U.S. Army and Navy.

During World War II, 35 blood bank centers were in operation. By the war's end, millions of donations had been received by the Red Cross. The donations saved the lives of thousands of wounded U.S. soldiers.

In 1944, Dr. Drew received the Spingarn Medal of the National Association for the Advancement of Colored People for outstanding contribution to human welfare. Notably, he was also one of the first African Americans to be selected for membership on the American Board of Surgery.

Dr. Drew passed away in 1950 in an automobile accident while en route to a scientific conference.

Carbon in High Energy Density Ultracapacitors: Increasing the Navy's Portable Power and Energy Storage

By Michelle Campbell, Research and Intelligence Department, Technical Communication Office, NAWCWD

As defense technology increases in complexity, so does the Navy's portable power and energy storage needs. On 3 December 2010, Colloquium Speaker Dr. Ramakrishnan Rajagopalan shared his current research efforts to use carbon as the electrode material of choice in high density ultracapacitors. The use of carbon in ultracapacitors provides a potentially viable source of improved portable power and energy storage.

"Energy storage is a big challenge for the Army and Navy," explained audience member John Stenger-Smith (4.12.4.2.2). "There is a huge need to reduce the weight of energy storage devices. The average ground soldier carries 30 pounds of batteries. We can minimize this [weight] by making higher energy density batteries or by making a hybrid system where the battery provides energy at low power and the ultracapacitor delivers energy at high power. Right now neither the energy density of ultracapacitors is high enough nor is the technology close enough to manufacture ultracapacitors on a large scale."

Benefits of High-Surface-Area Carbons as Electrodes

Ultracapacitors, also known as electrochemical capacitors and supercapacitors, store energy in such a manner that they are capable of delivering high power density (1 to 10 kilowatts per kilogram [kW/kg]) and rapid cyclability (greater than 100,000 cycles). Ultracapacitors also provide stable performance at extreme temperatures and are a lighter-weight alternative to the batteries currently carried by the Warfighter. High-surface-area carbons could provide an increased capitance for ultracapacitors.

"The current state-of- the-art ultracapacitors are double layer capacitors made of high surface area carbon electrodes," Dr. Rajagopalan explained. "Carbon is the proper choice for electrode material for several reasons."

Carbon's benefits include its porosity, bulk density, purity, and chemical structure and functional groups. Carbon also provides a cost-effective alternative to other electrode materials.

Commercially-available activated carbon can be synthesized from raw materials such as coconut shell, hardwood, phenol, and coal pitch. Dr. Rajagopalan and his team synthesized high surface area non-porous carbons from coal tar pitch and other polymer precursors. The carbons synthesized from coal tar pitch had an average pore size of approximately 0.8 nanometers (nm) and were used in both aqueous symmetric and asymmetric electrochemical capacitors.

Dr. Rajagopalan has filed an invention disclosure on "High surface area carbon derived from coal tar pitch/polymer blends for ultracapacitors." Currently, Dr. Rajagopalan is collaborating with NAWCWD to develop novel nanostructured asymmetric capacitors with high energy and power densities.

Dr. Rajagopalan has a PhD in materials science and engineering. His areas of interest include polymer-derived nanoporous carbons, shape selective carbon catalysts, activated carbon for electrochemical capacitors, membranes for gas separation, carbon nanotube/polymer composites for structural applications, polymer blends and block copolymers, catalytic synthesis of polymer nanofibers, and polymer brushes. Dr. Rajagopalan has 2 provisional patents and 2 invention disclosures.

Aircraft Canopy CRADA Could Increase Longevity and Reduce Life-Cycle Costs

By Michelle Campbell, Research and Intelligence Department, Technical Communication Office, NAWCWD

On 15 December 2010, Rear Admiral Mathias W. Winter, Commanding Officer of NAWCWD, signed a three-year Cooperative Research and Development Agreement (CRADA) with PPG Industries, Inc. of Pittsburgh, Pennsylvania. The CRADA, entitled "Preliminary Studies of Transparent Conductive Oxide Coatings Sputter Deposited onto Polymer Transparencies," could increase the longevity and reduce life-cycle costs of aircraft canopies.

Transparent Conductive Oxide (TCO) coatings are unique materials that are engineered to be as electrically conductive as metals but also as transparent as glass. TCO coatings are used for electrostatic charge dissipation on aircraft canopies as well as in many other military and commercial applications, including touch screens, flat panel displays, solar cells, smart windows, electromagnetic shielding, and anti-static packaging.

The partnership between NAWCWD and PPG will investigate new TCO materials that are harder, more flexible, and more cost effective than the coatings currently used on aircraft canopies. Implementing the new TCO coatings has the potential to increase the time between canopy replacements, thereby reducing canopy life-cycle costs by millions of dollars annually.

"The focus of the CRADA is to develop new TCO materials that can be deposited at room temperature by sputter deposition and that will adhere strongly to the polymer materials used in aircraft canopies," said Linda Johnson, NAWCWD research scientist. "The Navy has always been a leader in optical coating technology, and China Lake is well known for its in-house optical coating capability."

PPG Industries approached NAWCWD about a partnership upon learning of a new coating technology developed at China Lake. Johnson and Mark Moran, a fellow NAWCWD research scientist, have developed a proprietary, room-temperature deposition process through which NAWCWD will deposit the new TCO coatings onto polymers.

PPG Industries, which is a principal manufacturer of aircraft canopies and transparencies, will provide new laminate materials for NAWCWD to coat. PPG will then test each coating's durability and adhesion properties.

"If the PPG test results show that the HiTUS coatings deposited at China Lake have superior performance, it will be possible to design a much larger chamber that will be able to coat aircraft canopies," explained Moran. Such a chamber could save the Navy and Air Force several million dollars annually.

NAWCWD CRADAs for both the China Lake and Point Mugu sites are executed by Dr. Michael D. Seltzer, Head of the Technology Transfer Office. Since 1990, NAWCWD has executed more than 200 CRADAs with private industry and academia.

Economically and Energy Efficient Technology Develops Algae as a Biofuel and Biomass Feedstock

By Michelle Campbell, NAWCWD, Technical Communication Office

NAWCWD Colloquium Speaker Dr. Sukh Sidhu
Source: NAWCWD Technical Communication Office

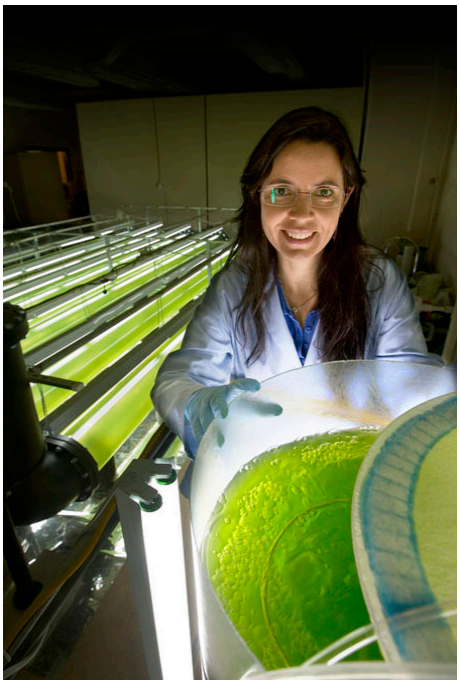
Algae are a promising alternative to other crops for producing biofuels and biomass feedstock. In addition to being a nonfood feedstock, algae can reduce atmospheric pollution caused by greenhouse gases because algae feed on carbon dioxide (CO_2) during the oil production process. Algae can also clean wastewater because they feed on two common wastewater compounds: nitrate and phosphate. On 19 January 2010, the Naval Air Warfare Center Weapons Division (NAWCWD), China Lake, welcomed Colloquium Speaker Dr. Sukh Sidhu, whose recent research focuses on developing economically and energy efficient technologies to turn algae into a viable biomass feedstock. Such research could further the Navy's goals to reduce carbon emissions and to develop energy security.

"Algae can be used to reduce the carbon footprint, reduce waste, create energy independence, and lower the environmental impact," Dr. Sidhu said. "Algae have a potential for huge production levels, but the technology is not yet in place."

Dr. Sidhu hopes his research will develop such technology. At the University of Dayton Research Institute's (UDRI) Carbon Sequestration and Bio Fuel Laboratory, Dr. Sidhu and his research team use microalgae photobioreactor systems (which contain and grow algae in a controllable environment) to produce algal feedstock for investigating the capture of CO2, for removing impurities from waste water, and for generating carbon-neutral biofuel. The benefits of using algae for such tasks include lowering the greenhouse gas (GHG) footprint and mitigating global warming..

One of Dr. Sidhu's main efforts is CO_2 sequestration, which is the process of removing carbon from the atmosphere and storing it. Currently, Dr. Sidhu and his team are designing a carbon sequestration effort for a local coal-fired power plant, where the CO_2 will be removed from sources such as flue gases and an animal farm waste stream. Ultimately, Dr. Sidhu and his team hope to produce enough algal biomass to help the local power company meet a goal of using 20% renewable fuel. Dr. Sidhu anticipates being able to eventually capture 1,300,860 tons of CO_2 per year (27% of the plant's CO_2) and produce 650,430 tons of algal biomass for energy generation per year, which could equate to 40,429,504 gallons of oil.

Dr. Sidhu is also focusing research efforts on removing impurities from wastewater. He and his team are in the process of integrating an algal production system into a local conventional wastewater treatment plant.



"A conventional wastewater treatment plant has disadvantages: CO_2 is given off during anaerobic digestion, which aggravates the greenhouse effect; there is a low removal of nitrate and phosphates; and there is high energy consumption," Dr. Sidhu said.

So far, the algal strains incorporated into the local treatment plant have decreased the nitrate content 80 to 90% and decreased the phosphate content 75 to 85%. In the future, Dr. Sidhu plans to determine the sustainability of the local treatment facility's wastewater as the sole nutrient source for algae.

Dr. Sidhu is also investigating the viability of algae as a feedstock for sustainable biofuels based on a green biofuel production process. Specifically, Dr. Sidhu is researching harvesting methods that are more economically and energy efficient than current biodiesel harvesting methods.

"Developing low-cost harvesting has been the single most limiting factor in expanding algal applications," Dr. Sidhu explained.

In order to combat the high cost and energy-intensive use of traditional biodiesel harvesting methods, Dr. Sidhu has implemented a combination of different processes for algal harvesting. These processes include auto flocculation (in which the algae's CO_2 source is interrupted, causing the algae to aggregate on its own), dissolved air flotation (the removal of suspended matter via air bubble flotation), and centrifugation (the use of centrifugal force to separate the algae from other materials).

Further components of Dr. Sidhu's work with the green biofuel production process include researching cost-effective, environmentally- and human-safe solvents that are completely recoverable and recyclable, and performing oil extraction on wet algae to negate the high cost and energy-intensive preprocessing steps for algal oil extraction. Moreover, Dr. Sidhu hopes to maximize lipid production without reducing algal growth rate by manipulating the growth medium.

Dr. Robin Nissan, NAWCWD Research Director and Head of the Research and Intelligence Department, appreciated Dr. Sidhu's "great overview of a technically challenging endeavor."

"Exploring ways of getting biomass are very important for our future and the economy," Dr. Nissan said. "As a large area RDT&E facility, we need to be considering all alternatives for energy generation as well as conservation."

Dr. Sidhu earned a PhD in chemical engineering from the University of Illinois. Dr. Sidhu and his research team have collaborated with numerous national and international entities, including the Air Force Research Laboratory (AFRL) and the Energy and Environmental Program Office at Wright-Patterson Air Force Base, Ohio.

HARDWARE IN-THE-LOOP RIBBON CUTTING CEREMONY

(Source: NAWCWD Michael Johnson, Visual Communication Office, NAWCWD)

Event Calendar

MARCH

NAVAIR's Edward H. Heinemann Award

Date: 21 March 2011

This award is presented annually to the individual or group of individuals within Naval Air Systems Command who achieved or helped achieve significant improvement in the design or modification of an aircraft or an aircraft system. Any employee of Naval Air Systems Command (Military or Civilian) is eligible for this award. This includes NAWCAD, NAWCWD, Fleet Readiness Centers, and all other field activities

Additional Information: NAVAIR personnel may call the Awards Office at 301.342.6862 for further instructions.

Women History Month: A Journey Through History

Date: 20 March 2011

Dr. Karen Higgins will discuss her history here at WD. 22 March at China Lake and 23 March at Point Mugu

Additional information: 805.351.4027

American Physical Society March Meeting 2011

Date: 21-25 March 2011

Description: Scientific sessions will be presented at the Dallas Convention Center. The scientific program includes more than 100 invited sessions and 550 contributed sessions at which nearly 7,700 papers will be presented.

Location: Dallas, TX

Additional Information: Visit the APS website for more information.

241st American Chemical Society (ACS) National Meeting and Exposition

Date: 27-31 March 2011

Description: ACS will host the 241st ACS National Meeting and Exposition to showcase recent developments in the chemical sciences.

Location: Anaheim, CA

Additional Information: Visit the ACS website for more information.

APRIL

NAVAIR's T. Michael Fish - Quality of Worklife Award Call

Date: 4 April 2011

The T. Michael Fish Award Quality of Worklife Award is designed to recognize excellence in a leader who changes the work to enhance efficiency while significantly improving the quality of worklife for the NAVAIR workforce (civilian and military). This award recognizes contributions that include efforts such as development and implementation of processes and programs that streamline our work, reduce cost, increase morale and communication. Nominations should include justification that focuses on the core mission as well as enhancements and improvements for the employees.

Additional Information: NAVAIR personnel may call the Awards Office at 301.342.6862 for more instructions.

2011 Interlaboratory Committee on Editing and Publishing (ILCEP) Conference

Date: 7–8 April 2011

The 2011 Interlaboratory Conference on Editing and Publishing (ILCEP) Conference we hosted by the U.S. Government Printing Office. The meeting will feature a variety DoD and GPO speakers who will discuss updates in the fields of editing and publishing.

Location: Washington, DC, GPO, Carl Hayden Room, 8th Floor, 732 N. Capitol Street.

Additional Information: For more details on how to register call 214.767.0451 ext. 16.

NAVAIR Fellows Program 1st Annual Science and Engineering Symposium

Date: 30 April 2011

Presentations and panel discussions will facilitate the exchange of new ideas, concepts, and data. 26-27 July.

Location: Patuxent River, MD
Additional information: Call 301.995.2651

2011 Defense Technical Information Center (DTIC) Conference

Date: 4-5 April 2011

Description: The Defense Technical Information Center (DTIC) is pleased to announce that the Honorable Zachary J. Lemnios, Assistant Secretary of Defense for Research & Engineering (ASD(R&E)) and Chief Technology Officer for the Department of Defense, will be the keynote speaker. Aligned with this year's conference theme, "DTIC: Your Authoritative Source of Defense Information for the Front Line and the Homeland," the other conference speakers will highlight the latest information tools to benefit the defense community.

Location: McNamara Headquarters Complex on Ft. Belvoir, VA, and for virtual attendees on Defense Connect Online (DCO).

Additional Information: The agenda is available at http://www.dtic.mil/dtic/annualconf/2011/2011Agenda.html. All of these DTIC events are available at no charge. For additional information, contact confinfo@dtic.mil.

The Colloquium Series offers NAWCWD employees an opportunity to stay abreast of trends in defense fields as well as to collaborate with top level researchers. Training credits are available for those in the Engineer and Scientist Developmental Program (ESDP). For specific dates, times, and locations of each lecture, please call 760.939.8650 or 760.939.7719.

Naval Air Warfare Center Training Systems Division (NAWCTSD) Embraces Mentoring To Enhance Workforce

By Phillip Howell, Strategic Operations Division, NAWCTSD

> "A mentor is someone whose hindsight can become your foresight."
>
> --Anonymous

For businesses and government agencies alike, it is hard to imagine an endeavor that has more "win-win" aspects than a mentoring program. Such programs provide a supporting framework for mentor and protégé partnerships that almost invariably leads to enhanced productivity, improved workforce morale, and more rapid career advancement for the men and women who are mentored. As evidence of the value of these programs, more than 70% of Fortune 500 companies have active mentoring programs.

The Naval Air Warfare Center Training Systems Division (NAWCTSD), Orlando, Florida, has embraced mentoring as an important tool in helping employees achieve their full potential while improving the organization's ability to meet the challenges of the future. Leveraging a long standing mentoring program at the NAVAIR at Patuxent River Naval Air Station, Maryland, NAWCTSD recently launched its "iMentor…Do U?" initiative. The mentoring program's training and cross-competency communication is centered largely around NAVAIR's "Mentoring Toolkit" published a few years ago.

Though NAWCTSD just formalized its mentoring program, it has long supported such cooperative relationships.

"What we are doing now is placing command emphasis on our mentoring program and providing both mentors and protégés with supporting mechanisms to help maximize successful outcomes," explained Walt Augustin, NAWCTSD Technical Director and a strong advocate of the mentoring effort.

Mike Friedman, NAWCTSD Director of Corporate Operations and the organization's mentoring team lead, believes the program is one of the keys to meeting the evolving needs of the Orlando unit.

"Our aim is to further enable an already-accomplished workforce, while enhancing our mission effectiveness," Friedman said. "Investing our time and money in our employees is not only the right thing to do, but is critical to our success. Through mentoring, we expect to improve workforce morale, achieve higher employee retention rates, and provide greater promotion potential for workers."

Another anticipated benefit is a deeper connection between leadership and younger workers. "With [mentoring] partnerships, ideally, you have two-way communication," said NAWCTSD commanding officer Captain Bill Reuter. "Each gains an appreciation for the other's challenges, abilities, needs, and desires. Through each mentoring team, you are helping to build not only individuals, but the organization as a whole. That is good for NAWCTSD, good for the Navy, and good for the Warfighters we serve."

"Through a survey of the workforce, we have found that there is great acceptance and even enthusiasm about a command mentoring program," Friedman added. "What we want to provide is a more structured and supportive environment where mentor-protégé partnerships become ingrained in our workplace culture."

The productivity improvement often seen with mentoring programs will no doubt prove important to the command. The Department of Defense (DOD) recently embarked on a "tooth-to-tail" look at business operations throughout the military services, focusing on overhead costs in relation to the amount of money spent on combat force structure. Each service branch is being asked to take a hard look at cost saving measures in their area of responsibility. Defense Secretary Robert Gates has said his goal is to cut $100 billion in overhead and nonessential weapons programs by 2015.

One of that effort's potential ramifications could be a slow-down in new staffing for NAWCTSD. Coupled with the reality that 66% of the workforce

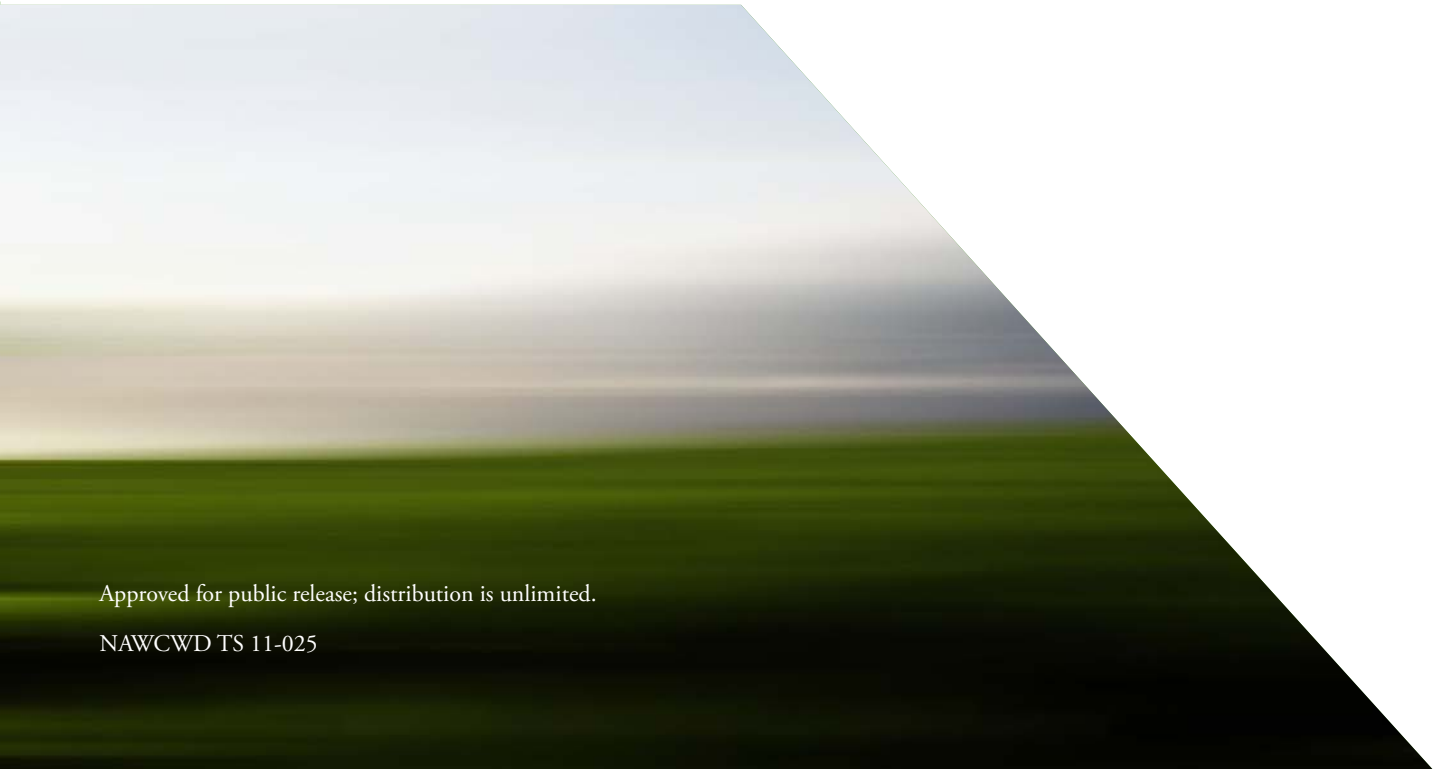
is retirement-eligible or within a few years of retirement eligibility, the command is methodically employing every tool at its disposal to sharpen its capabilities and productivity—including mentoring.

"One of the key outcomes of our mentoring program, we believe, will be the transfer of knowledge between generations of employees," said Reuter, who expects that the advantages of mentoring will prove critical to continuing NAWCTSD's leadership in military simulation and training. "With two-thirds of our workforce at or nearing retirement eligibility, we see mentoring as a crucial vehicle for allowing our more senior workers to share a tremendous storehouse of institutional knowledge with younger generations."

That sentiment is shared by Gary Fraas, head of NAWCTSD's Advanced Simulation Division, who recently joined the program as a mentor. "We have done a lot of hiring in the past two years, ranging from recent college graduates to mid-careerists, and it is imperative that we grow the knowledge base of our employees and provide career guidance as they progress," said Fraas, who has served the Navy for 35 years as a civilian engineer. "Mentoring is a way to expand everyone's horizons. It gives mentors a chance to see things through the eyes of younger employees, and protégés have the opportunity to tap into the experience of personnel who have spent the better part of their careers in the training and simulation business. Everybody benefits from a program like this."

For protégé Marina Fernandez, a computer engineer who possesses nearly 20 years of experience in her field and was hired by NAWCTSD 10 months ago, the mentoring program has helped shine some light on Navy programs and operations. "I came from private industry, and although many aspects of the work are similar, there is certainly a difference in culture…between a civilian company and a military organization. My mentor has really helped me to understand that culture and to quickly become part of the team."

Leticia Izquierdo, lead engineer for Multi-Modal Communications in NAWCTSD's Concept Development and Integration Lab (CDIL), enjoys the best of both worlds — she is both a mentor and a protégé. "Even if you have many years of service, everyone runs into a situation or problem for which there is no set answer. Having a mentor to turn to for guidance can be a big help. Even if they do not have the answer, it is good to have someone you can talk to. As for being a mentor, helping others to achieve their best is very gratifying, very rewarding. It is not only the protégé who learns and benefits. As a mentor, the relationship also allows you to grow, both as a member of the organization, and as a person. I would highly recommend it to anyone."



NAWCWD TS 11-025